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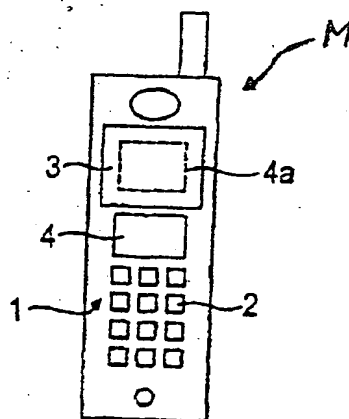
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[54] 发明名称 移动通信终端装置

[57] 摘要

本发明涉及一种具有操作界面(1)的移动通信终端装置,该界面包括显示器(3)和键盘(2)。在所述的操作界面(1)上布置有生物统计传感器(4)用于扫描和识别指纹。能够特别地根据传感器所检测的指纹方向控制本发明的通信终端装置。



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1. 一种移动通信终端装置，包括操作界面(1)，在该界面上布置有用于识别指纹的生物统计传感器(4, 4a)，其中将生物统计传感器(4, 4a)布置成用于检测手指的方向。

5 2. 根据权利要求1所述的通信终端装置，其特征在于，
传感器(4a)集成在通信终端装置的显示器(3)中。

3. 根据权利要求1或2所述的通信终端装置，其特征在于，
传感器(4, 4a)包括平面范围，其允许将手指放置在不同位置上。

10 4. 根据权利要求3所述的通信终端装置，其特征在于，
传感器(4, 4a)检测不同的位置。

5. 根据权利要求1到4之一所述的通信终端装置，其特征在于，
传感器(4, 4a)检测连续扫描一个手指或者多个手指之间的时间间隔。

6. 根据权利要求1-5之一所述的通信终端装置，其特征在于，
传感器(4, 4a)作为装置操作的输入装置。

15 7. 根据权利要求1-6之一所述的通信终端装置，其特征在于，
传感器(4, 4a)在该终端中用于显示输入的输入装置。

8. 根据权利要求1-7之一所述的通信终端装置，特征在于，
将传感器(4, 4a)布置成用于识别多个指纹及其方向。

移动通信终端装置

5 本发明涉及一种移动通信终端装置。该终端通常包括操作界面，在该界面上布置有显示器和键盘。内容非常丰富的操作功能构建于最大内容范围的菜单结构中。该菜单结构不考虑通常使用的功能，即通常使用的操作功能与较经常使用的功能必须完全一样地进行烦琐的呼叫。通信终端装置一般属于确定用户并包括与此相应的登录功能，通过该功能授权用户借助PIN注册。但是这种注册一般情况下常常不是必须的，因此丢失PIN将产生危害。

10 本发明的任务是提供一种简化操作的通信终端装置。

该任务通过权利要求1来实现，在操作界面中提供了用于识别指纹的生物统计传感器。该传感器而且能够以通过节约空间的方式集成到显示器中，并通过更高分辨率来扫描手指尖的纹路以及通过与存储在装置中的样本进行比对来识别例如属于授权用户的确定手指特性的指纹。为了注册，用户因此不必再输入任何
15 PIN，而是简单地将一确定的手指放置在传感器平面上。

在一种优选的安排中，传感器包括扩大的平面，允许将手指放置在不同位置上。所以该传感器这样构成，即该传感器可以识别不同的位置。为了授权，在除了指纹以外甚至也还使用其位置或方向。传感器最终仍旧如此布置，它识别连续的指纹之间的时间间隙。因此，另外的合并可能性仅仅考虑用于授权验证。传感器
20 器即可以同时作为输入装置操作。那么指纹，位置，方向或时间间隙可以任意地，优选为由用户将其定义合并以用于装置的操作。即，可以在传感器上实现呼叫确定菜单，装置功能的调节等等。

仅仅通过借助在附图中描述的实施方案来更详细地理解本发明。其中，示出了：

25 图1是通信终端装置的俯视图，

图2描述了两个手指扫描的示意图。

在图1中描述的通信终端装置M包括一个操作界面1，其上布置有键盘2、显示器3和生物统计传感器4。传感器4例如为矩形形状并布置在显示器3和键盘2之间。在一种替换的安排中，传感器4a以节约空间的方式集成在显示器3中。传感器4
30 如此安排，使得它除了检测手指尖样本或指纹，还检测方向5（图2）和手指位置

通过这种方法，即通过检测指纹为通信终端装置转发控制指令，可以实现通

信终端装置的控制, 其与周围的噪声电平无关并且优选在无噪声环境, 如会议室中执行。

特别是, 在通信终端装置为较小尺寸的移动电话时, 传感器4或4a的尺寸可以小到恰好检测指纹及其方向。

- 5 也可以设想, 在较大尺寸的通信终端装置上这样设置传感器4或者4a及其传感器面, 即使得在不同位置进行手指的放置和检测。藉此, 实现了进一步控制自由度。

- 10 类似的, 为了授权认证对通信终端装置M进行操作时, 通过传感器4或4a检测用户的指纹。替代或附加的是, 为了符合指纹样本, 在传感器4或4a上检测作为授权特征的手指或者指纹的方向和/或位置。

- 15 指纹或者指纹检测除了授权以外还可以用于控制通信终端装置。例如, 在准备状态, 在其状态其通信终端装置等待用户控制指令如输入电话号码或者菜单呼叫, 通过检测在确定方向上的指纹, 如上述图2中所示手指尖向上的垂直方向的指纹, 翻阅转发选择拨叫电话号码的目录。意思是在图2所示垂直方向上每次重复按压手指到传感器4或4a上, 例如为了开始列入记录, 在转发选择的列入记录时在无限重复中翻阅所述的目录, 其中例如通过以水平方向手指的按压, 如图2中相应所示的, 选择所列记录或者选择相应的电话号码。还可以设想, 借助其他为此特别提供手指的指纹进行选择所列记录, 其中也可以将与传感器4或4a相对的方向作为选择准则。

- 20 除了可能的以外, 翻阅或者浏览准备拨叫电话号码的目录, 而且也有可能, 通过检测指纹或者其方向翻阅准备拨叫的目录或常常不必要(和因此预先设置)的功能或者应用, 如发送SMS(短消息业务)消息的应用或者扩展通信终端装置电话本等的应用。翻阅目录的应用以相应方式如翻阅电话号码目录或通过触摸键盘2(即至少一次触摸翻阅目录以及相应地一次触摸选择该所列记录)来执行。

- 25 进一步可能的, 通过检测指纹或者其方向(在将通信终端装置构造为电话时)接受或拒绝呼叫。通信终端装置的用户接收到呼叫信号时, 因此例如可以在垂直方向通过放置确定的手指, 如图2中所示来接收呼叫或者在水平方向通过放置确定手指同样如图2所示来拒绝呼叫。

- 30 进一步可以设想, 通过检测指纹或者其方向利用复杂菜单结构来导航, 特别是为此通过指纹或者其方向进行呼叫。因此, 向右移动手指以选择菜单点和向左移动手指以返回到更高级菜单时, 垂直向上或者向下移动手指, 由此对单独的菜单点进行导航。相应地, 进行菜单的控制过程, 并同时通过检测不同手指(相应

地执行功能)或者通过检测连续指纹之间的时间间隙,通过一个或多个手指按压传感器4(4a)执行目录并应用。

在控制通信终端装置之外,检测的指纹或者其方向特别是多个手指的指纹和方向用于显示输入(Eingabe von Zeichen)。由此,用户可以为了输入电话号码字母应用一只手的五个手指。因此例如,如图2中所示,从拇指到小指的手指或者其垂直方向的指纹表示数字“1”,“2”,“3”,“4”,“5”,在水平方向的手指中,同样如图2中所示,分别表示为“6”,“7”,“8”,“9”,“0”。在借助指纹选择用于输入电话号码的特定应用后,单独的上述手指以确定的方向位于传感器上,以便输入电话号码的数字。随后,例如通过在传感器上保留手指表示的当前数字大于预定的时间间隔,选择电话号码以开始建立通信连接。在精确检测指纹或者其方向时也可以设想,即不仅识别手指的水平方向或垂直方向,而且也识别“倾斜”方向,也就是位于“水平”和“垂直”之间的角度。因此手指的指纹与其方向相结合安排了多个显示,因此例如除了数字输入以外,也可能实现字母的输入。进一步设想,代替之间输入电话号码,例如为了建立通信连接而选择电话号码,将迅速选择数字合并的相应手指相继(用正确方向)放在传感器上。

在具有扩大传感器平面的传感器上也有可能,即检测两个或多个指纹一次,其中通过两个或多个确定指纹的合并,由传感器检测来指纹,同样也可能控制通信终端装置。进一步除了合适的指纹样本以外,每一个手指合并的方向作为另外的控制原则应用,因此产生多个控制指令,该指令能够通过检测指纹来实现。

在传感器具有扩大传感器平面时,进一步可能的是,在不同位置上检测一个或多个指纹,以便根据检测指纹的位置进行确定的控制过程。在能够在以垂直方向对准放置在传感器平面的右边部分上的手指期间开启显示转发选择功能的应用,例如,以预定的时间间隔,以垂直方向对准放置在传感器平面的右边部分上的手指使得开启应用即显示转发选择电话号码的目录。

图1中所示的通信装置能够构造为特别是符合GSM(用于移动通信的全球系统)或UMTS(全球移动电信服务)标准的移动无线装置或者移动电话。该通信装置仍可以构造为一个(小的)便携计算机,如管理器或PDA(PDA=个人数字助理)。进一步可能的是,该通信终端装置也可构造为臂戴式通信终端装置,如一个手表或手腕式电话(Wirst-Phone)。

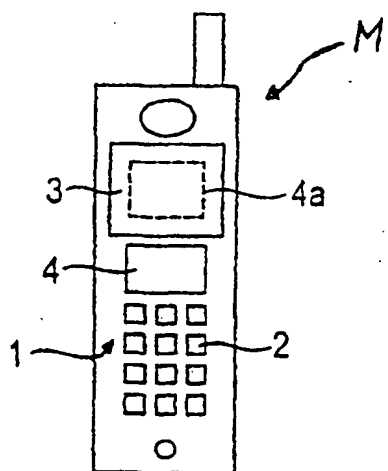


图 1

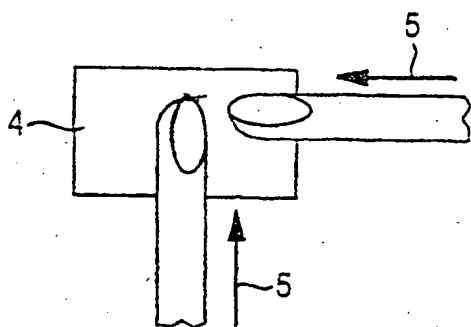


图 2

family P.D of D₁

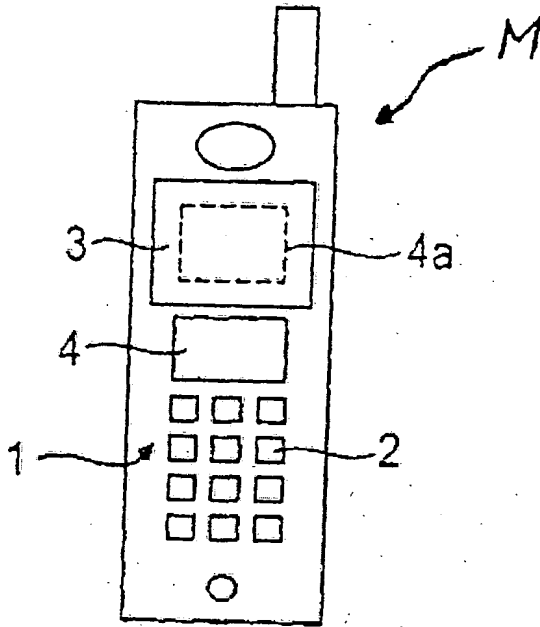
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Abstract of US2004132490

The invention relates to a mobile communication terminal having an operating surface (1) comprising a display (3) and a keyboard (2). A biometric sensor (4) is arranged on said operating surface (1), for scanning and identifying a fingerprint. The inventive communication terminal can be controlled especially according to the orientation of the fingerprint, which is detected by means of the sensor.



Description of US2004132490

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a mobile communication terminal. Such devices normally have an operating surface on which a display and a keyboard are arranged. The highly extensive operating functions are typically organized in extensive menu structures. The menu structure does not now take into account the frequency with which a function is used; i.e., frequently used operating functions must be called up in the same complex manner as less frequently used functions. Communication terminals are usually assigned to a specific user and, accordingly, have a login function with which the authorized user logs on using a PIN. However, logging on in this way is not normally necessary and so there is a risk that the PIN will be forgotten.

[0002] The document WO 99 28701 A discloses a mobile communication terminal with an operating surface on which a biometric sensor for identifying a fingerprint is arranged.

Furthermore, the document EP-A-0 736 836 discloses the concept of determining the orientation of a fingerprint to be verified in order to improve the quality of identification. The document U.S. Pat. No. 5,828,773 discloses a device with a fingerprint sensor wherein, the device determines the actual position of the fingerprint on the fingerprint sensor relative to a required position.

[0003] An object of the present invention is to propose a communication terminal having a simplified operation.

SUMMARY OF THE INVENTION

[0004] Such object is achieved according to an embodiment of the present invention wherein a biometric sensor for identifying a fingerprint is disposed on the operating panel of a mobile communication device. The sensor, which also may be integrated into the display in a space-saving manner, scans the ridges of a fingertip with high resolution and identifies, for example, the characteristic fingerprint structure assigned to a specific finger of an authorized person by comparing it with a sample stored in the device. The user, therefore, no longer logs on by entering a PIN, but merely by placing a certain finger on the sensor surface.

[0005] In an embodiment, the sensor has an extended surface which allows a finger to be placed in different positions. Such a sensor is designed so that it recognizes the different positions. As such, the position or orientation of the fingerprint can be used for authorization purposes as well as the fingerprint itself. Finally, the sensor is designed such that it recognizes the time interval between successive finger scanning operations. This provides a further combination option that does not just relate to authorization verification. This is because the sensor also can be used as an input device. A fingerprint, a position, an orientation or a time interval can be used in any combination (preferably to be defined by the user) in order to operate the device. In other words, functions such as calling a specific menu, setting a device function, or similar can be done via the sensor.

[0006] Additional features and advantages of the present invention are described in, and will be apparent from, the following Detailed Description of the Invention and the Figures.

BRIEF DESCRIPTION OF THE FIGURES

[0007] FIG. 1 shows a top view of a communication terminal.

[0008] FIG. 2 is a schematic diagram showing the scanning of two fingers.

DETAILED DESCRIPTION OF THE INVENTION

[0009] The communication terminal M shown in FIG. 1 includes an operating panel 1 on which are arranged a keyboard 2, a display 3 and a biometric sensor 4. The sensor 4 is, for example, rectangular and is arranged between the display 3 and the keyboard 2. In an alternative embodiment, the sensor 4a is integrated in the display 3 in a space-saving manner. The sensor 4 is designed such that it can register the orientation 5 (FIG. 2) and the position of the finger as well as the sample of the fingertip or the fingerprint.

[0010] In this way (i.e., by registering a fingerprint in order to derive control instructions for the communication terminal), it is possible for the communication terminal to be controlled irrespectively of the ambient noise level, and for it to be done, for example, in a quiet environment such as meetings.

[0011] Particularly in the case of communication terminals in the form of mobile telephones having small dimensions, the sensor 4 or 4a may be small enough for just one fingerprint and its orientation to be registered.

[0012] However, it is also possible, with larger communications terminals, for the surface of the sensor 4 or 4a to be designed such that a finger may be placed and registered in different positions. This enables a greater degree of control flexibility to be achieved.

[0013] Firstly, for the purpose of verifying authorization during the commissioning of the communication terminal M, a fingerprint of the user may be registered using one of the sensors 4 or 4a. The orientation and/or the position of a finger or fingerprint may be registered as an authorization feature on the sensor 4 or 4a instead of or in addition to the actual fingerprint sample.

[0014] As well as authorization verification, a fingerprint or its registration also may be used to control the communication terminal. For example, in a standby mode, in which the communication terminal awaits control instructions from a user, such as the entry of a telephone number or the calling of a menu, by registering a fingerprint in a specific orientation, such as vertically with the fingertip pointing upward as shown in FIG. 2, it is possible to browse through a list of last dialed telephone numbers. As such, for example, each time the finger is pressed again onto the sensor 4 or 4a in the vertical orientation shown in FIG. 2, the aforementioned list is browsed through in an endless repetition to find a list entry, starting with the last dialed list entry and, for example, by pressing the finger in a horizontal orientation, as also shown in FIG. 2, a list entry can be selected and/or the corresponding telephone number dialed. It is also possible to select a list entry using the fingerprint of a different finger specifically assigned for that purpose, in which case the orientation of this finger with regard to the sensor 4 or 4a also can be used as a selection criterion.

[0015] In addition to the possibility of browsing or scrolling through a list of telephone numbers that already have been dialed, by registering a fingerprint or its orientation it is also possible to browse through a list of already dialed or frequently required (and, therefore, preset) functions or applications, such as an application for creating an SMS (Short Message Service) message or for extending the communication terminal's own telephone directory, etc. The list of applications also may be browsed in the same way as the list of telephone numbers or by using keys on the keyboard 2 (i.e., at least one key for browsing through the list and possibly one key for selecting the list entry).

[0016] It is also possible, by registering a fingerprint and/or its orientation (where the communication terminal is a telephone), to accept or reject calls. If the user of the communication terminal receives a call signal, such user may, for example, accept the call by placing a certain finger in a vertical orientation, as shown in FIG. 2, or reject the call by placing a certain finger in a horizontal orientation, as also shown in FIG. 2.

[0017] It is also possible, by registering a fingerprint and/or its orientation, to navigate through complex menu structures which have, in particular, been called up beforehand via a fingerprint and/or its orientation. Thus, a vertically oriented finger pointing upward or downward can be used to navigate through the individual menu items, while a finger pointing to the right is used to select a menu item and a finger pointing to the left is used to return to a higher menu level. Control processes for menus, as well as lists and applications, can be executed accordingly by registering different fingers (according to the functions to be executed) or by registering the time

interval between successive finger scanning operations by the sensor 4 (4a) of one or more fingers.

[0018] In addition to controlling the communication terminal, the registered fingerprints and/or their orientation, in particular of several fingers, may be used for inputting characters. This is based on the assumption that a user might wish to use the five fingers of one hand to input the digits of a telephone number. Thus, for example, the fingers from the thumb to the little finger, and/or their imprint in a vertical orientation as shown in FIG. 2, represent the digits "1", "2", "3", "4", and "5", while the same fingers in a horizontal orientation, as also shown in FIG. 2, represent the digits "6", "7", "8", "9" and "0". After selecting a special application for inputting telephone numbers via fingerprints, the individual fingers described above are placed on the sensor in a specific orientation in order to input the digits of the telephone number. Finally, it is possible (for example, by leaving the finger representing the last digit on the sensor for longer than a preset-interval) to begin dialing the telephone number in order to set up a communication connection. If the fingerprint and/or its orientation are precisely registered, it is also possible to identify not only a horizontal or vertical finger orientation, but also "diagonal" orientations lying at an angle between "horizontal" and "vertical". Thus, a fingerprint of a finger combined with its orientation may be assigned a great many-characters so that, for example, letters may be entered as well as digits. It is also possible, for example, instead of inputting a telephone number directly, to place in succession the finger or fingers that correspond to an abbreviated dialing combination on the sensor (in the correct orientation) in order to cause the telephone number to be dialed for the purpose of setting up a communication connection.

[0019] In the case of sensors with an extended surface, it is also possible to register two or more fingerprints at once, in which case the communication terminal also can be controlled by combining two or more specific fingerprints that are registered by the sensor. Furthermore, if the orientation of the relevant finger combination is again used in addition to the actual fingerprint sample as an additional control criterion, this results in a great number of control commands that may be implemented by registering the fingerprints.

[0020] In the case of sensors with an extended surface it is also possible to register one or more fingerprints in different positions so as to execute specific control procedures depending on the position of the registered fingerprints. In a standby mode, for example, placing a finger vertically on the right-hand section of the sensor surface may open an application that shows a list of last dialed telephone numbers, while placing a finger vertically on the right-hand section of the sensor surface may open an application that shows a list of last selected functions.

[0021] As shown in FIG. 1, the communication device may be designed as a mobile radio device or mobile telephone; in particular, one conforming to the GSM (Global System for Mobile Communication) or the UMTS (Universal Mobile Telecommunication Service) standard. It also may, however, be designed as a (small) portable computer, such as an organizer or a PDA (personal digital assistant). It is also possible for the communication terminal to be designed as a communication terminal to be worn on the arm, such as a watch or wrist phone.

[0022] Indeed, although the present invention has been described with reference to specific embodiments, those of skill in the art will recognize that changes may be made thereto without departing from the spirit and scope of the present invention as set forth in the hereafter appended claims.

Claims of US2004132490

9. (new): A mobile communication terminal, comprising:
an operating surface; and
a biometric sensor for identifying a fingerprint arranged on the operating surface, wherein the biometric sensor registers an orientation of a finger and enters a specific control instruction into the mobile communication terminal, depending on the registered orientation of the finger, for controlling the mobile communication terminal.
10. (new): A mobile communication terminal as claimed in claim 9, further comprising a display in which the biometric sensor is integrated.
11. (new): A mobile communication terminal as claimed in claim 9, wherein the biometric sensor has an extended surface which permits a finger to be placed in different positions.
12. (new): A mobile communication terminal as claimed in claim 11, wherein the biometric sensor registers the different positions.
13. (new): A mobile communication terminal as claimed in claim 9, wherein the biometric sensor registers a time interval between successive scanning operations of at least one finger.
14. (new): A mobile communication terminal as claimed in claim 9, wherein the biometric sensor is used as an input device for operating the mobile communication terminal.
15. (new): A mobile communication terminal as claimed in claim 9, wherein the control instruction entered through the biometric sensor is used for one of controlling a menu structure shown on the operating surface and entering characters.
16. (new): A mobile communication terminal as claimed in claim 9, wherein the biometric sensor is used to detect a plurality of fingerprints and their respective orientations. s.